US005218645A

United States Patent [19]

Bacus

[11] Patent Number: 5,218,645

[45] Date of Patent: Jun. 8, 1993

[54] METHOD AND APPARATUS FOR SEPARATING CELL OBJECTS FOR ANALYSIS

[75] Inventor: James V. Bacus, Lombard, Ill.

[73] Assignee: Cell Analysis Systems, Inc., Elmhurst, Ill.

[21] Appl. No.: 677,213

[22] Filed: Mar. 29, 1991

[51] Int. Cl.[5] G06K 9/00

[52] U.S. Cl. 382/6; 382/48; 364/413.08

[58] Field of Search 382/6, 48; 364/413.08, 364/413.1; 358/107, 93; 356/39

[56] References Cited

U.S. PATENT DOCUMENTS

4,453,266	6/1984	Bacus	382/6
4,592,089	5/1986	Hartman	382/6
4,845,552	7/1989	Jaggi et al.	382/6
4,932,044	6/1990	Williams et al.	382/6
5,016,283	5/1991	Bacus et al.	364/413.08
5,031,099	7/1991	Kettler	364/413.08

OTHER PUBLICATIONS

G. Brugal, "Image Analysis of Microscopic Preparations", *Method and Achievements in Experimental Pathology*, vol. 11, pp. 1-33.

W. Auffermann et al., "Early Detection of Precancerous Lesions in Dysplasias of the Lung by Rapid DNA Image Cytometry", *Analyt. & Quanat. Cytology & Histology*, vol. 7, No. 3, Sep. 1985, pp. 218-226.

W. Aufferman et al., "Rapid Diagnostic DNA Cytometry with an Automatic Microscope and a TV Image-Analysis System", *Analyt. & Quant. Cytology & Histology*, vol. 6, No. 3, pp. 179-188.

Primary Examiner—Jose Couso

Attorney, Agent, or Firm—Fitch, Even, Tabin & Flannery

[57] ABSTRACT

A method and apparatus for analyzing the cell objects of a cell sample for the diagnosis and treatment of possible cancer is disclosed. An optical image of the cell sample is digitized and stored in a frame buffer. The digital image is then displayed on a video monitor. The apparatus can automatically select cell objects from the sample for analysis. Also, an operator can influence the selection of cell objects by manipulating a computer pointing device (mouse) to draw lines on the displayed image. When a line is drawn through a cell object, the cell object can be separated into portions for analysis. When a line is drawn around a region of interest in the image, the region of interest can be separately analyzed to the exclusion of the rest of the image.

11 Claims, 8 Drawing Sheets